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GUIDE TO HANDLING AND DISPOSAL OF CHEMICALS IN USE AT INDIAN RESERVE SCHOOLS

by

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Environmental Protection
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Winnipeg, Manitoba

GUIDE TO HANDLING AND DISPOSAL OF CHEMICALS IN USE AT INDIAN RESERVE SCHOOLS

1.0 INTRODUCTION

This Guide has been prepared in response to requests from Health and Welfare Canada Environmental Health Officers for information on the management of chemicals in Indian reserve school science programs. It is intended to help science instructors handle, use and dispose of chemicals in a safe and environmentally acceptable manner. Information on the health hazards, hazardous reactions, recommended storage groups and disposal instructions have been compiled for various chemicals that have been identified from inventories of chemicals being used in science programs on Indian reserve schools throughout Manitoba.

It is recommended that this Guide be used as a tool in a review of the school science curriculum at the Indian reserve school. The Guide can help the science instructor determine whether chemicals presently used in preparing science experiments are particularly hazardous to health or to the environment. The science instructor can then determine if it is possible to substitute less hazardous chemicals or procedures, while still maintaining the objectives of the science demonstration or experiment.

From the information presented in the Guide, the science instructor can also determine if chemicals presently in use are being stored safely. In many instances, chemicals are currently stored in alphabetical order, regardless of compatibilities. This practice is potentially dangerous because certain products can react violently together or produce toxic products. A storage classification scheme has been devised to take into account the chemical compatibility of chemicals and provide for a safe storage system.

Instructions have also been provided to assist in the disposal of outdated and unwanted chemicals. Specific instructions have only been provided where the disposal of the chemicals would present a negligible hazard to the environment.

The information contained in the Guide has been compiled from various sources (see Bibliography) to ensure the greatest degree of accuracy possible. The references in the Bibliography should be consulted for more information on the chemicals listed.

2.0 RECOMMENDATIONS FOR MANAGEMENT OF CHEMICALS

Certain actions should be taken by the science instructor to ensure that problems associated with unwanted or unneeded chemicals are minimized. The following practices are recommended in the school environment:

1. It is recommended that only small quantities of chemicals be purchased. This may be more economical in the long term than purchasing a larger quantity as the need to dispose of unneeded or outdated chemicals may be eliminated.

2. It is important to determine if there are any hazards associated with a particular chemical before the chemical is purchased. If a chemical poses unacceptable health risks, or is hazardous because of its reactivity, it may be possible to substitute a less hazardous chemical to demonstrate the same principle.

3. An inspection should be performed to determine if there are chemicals presently in storage that are particularly dangerous. This would include highly or extremely toxic chemicals, carcinogenic or mutagenic chemicals, chemicals that form explosive peroxides on storage and highly reactive chemicals. These chemicals should be removed from the laboratory environment without delay, and a policy should be adopted to prohibit re-ordering of these products.

4. A current inventory of chemicals should be maintained. This will ensure that chemicals which are already in stock are not re-ordered. If the date of purchase is noted on the inventory, the science instructor can then quickly determine if a chemical is approaching the expiry date and take necessary corrective action.

5. For each chemical in storage, a Material Safety Data Sheet (MSDS) should be obtained from the laboratory supply house. The MSDS should be current (less than 3 years old) and placed in a location where it is readily available.

3.0 EXPLANATORY NOTES

A tabular format has been used to present the information, with the chemical names placed in alphabetical order. An explanation of the column headings is given below:

3.1 CHEMICAL NAME: Chemicals are listed by their commonly accepted name or simple chemical name, as listed in The Merck Index (1989).

3.2 FORMULA: The molecular or atomic formula is given for most chemicals, with the exception of long entries, where the empirical formula is provided instead.

3.3 HAZARD TO HEALTH: The information shown in this column is to help users appreciate the potential adverse effects of chemical exposure. This category includes information on tissue irritation, narcosis, carcinogenicity and toxicity where applicable. Absence of data does not imply that effects do not exist, but rather, that information is not readily available.

Tissue irritation results from direct contact with the chemical or from breathing the vapours. This includes irritation to skin or eyes or to the entire respiratory system. Chemicals that are designated corrosive are strongly irritating to tissue. Alkaline or acidic aqueous solutions are irritating to tissue to various degrees, depending on the pH of the solution.

Narcosis refers to a depression of the central nervous system. A chemical designated as a narcotic can induce sleep or coma, and may be addictive.

Carcinogenicity has been indicated for both known and suspected carcinogens without distinction. Carcinogens are substances that cause the development of cancerous growths in man or animals.

Mutagenicity has also been indicated for both known and suspected mutagens without distinction. Mutagens are substances that are able to induce mutations or genetic change in DNA or in living cells.

Toxicity is based on the estimated single dose lethal to humans. Serious injury could result with lower doses. The description of the hazard and the corresponding lethal dose in grams per kilogram of body weight and for a 70 kg (150 lb.) person are as follows:

Descriptive Term	Estimated Oral Lethal Dose	
	Dose (g/kg)	Dose for a 70 kg (150 lb) Human
Nontoxic	15 or more	more than 1 L (1 quart)
Low toxicity	5 to 15	between 1/2 L (1 pint) and 1 L (1 quart)
Moderate toxicity	0.5 to 5	between 35 mL (1 ounce) and 1/2 L (1 pint)
High toxicity	0.05 to 0.5	between 3.5 mL (1 tsp) and 35 mL (1 ounce)
Extreme toxicity	less than 0.05	less than 3.5 mL (1 tsp)

For corrosive chemicals, no toxicity rating has been given. A toxicity rating is not an appropriate measure of lethality, as death is usually the result of severe injury to tissue with secondary complications.

3.4 HAZARDOUS REACTIONS: Flammability, chemical incompatibilities and explosion risks are given where applicable. Lack of data does not indicate that the chemical is stable or unreactive, but rather, that information is not readily available.

Flammable designates chemicals which will ignite either spontaneously or from exposure to high temperature or to a spark or open flame. Less easily ignited chemicals are described as combustible.

Incompatible chemicals are chemicals that can react when they are combined

- by exploding
- by generating heat or pressure
- by forming toxic products
- by forming flammable products

Many chemicals are incompatible with oxidizing and reducing agents which are very reactive. Examples of these agents commonly found in laboratories are listed below:

Oxidizing Agents	Reducing Agents
Chlorates	Ammonia (anhydrous and aqueous)
Chromates	Carbon
Chromium trioxide	Metals (e.g. K, Na, Al, Fe)
Dichromates	Metal hydrides (e.g. NaH, LiH)
Halogens (e.g. Cl_2, Br_2, I_2)	Nitrites
Nitrates	Organic compounds
Perchlorates	Phosphorus
Peroxides	Silicon
Permanganates	Sulfur
Persulfates	

Explosion risks are identified for some chemicals. Explosions can occur as a result of shock or friction to chemicals that form explosive peroxides during storage. These peroxidizable chemicals should be discarded within 6 months after opening. Shock-sensitive chemicals also have potential for producing violent explosions when subjected to shock or friction.

3.5 **STORAGE CLASSIFICATIONS:** Eight storage classifications are recommended for the safe organization of chemicals:

1) Inorganic Acids
2) Inorganic Oxidizers
3) Air / Water Sensitive
4) Inorganic Solids
5) Organic Solids
6) Organic Oxidizers
7) Organic Solvents / Acids
8) Gas Cylinders

The eight classes of chemicals should be isolated from one another to prevent reactions between the classes. It is further recommended that, within a classification, solids be separated from liquids. If space is limited, different shelves of a storage cabinet could be assigned to each class of chemicals. However, it is preferable to have a separate metal storage cabinet for each class of chemicals. To simplify retrieval of chemicals, the chemicals can be sorted alphabetically within a class.

1. Inorganic Acids include the mineral acids - nitric, sulfuric, hydrochloric and phosphoric. Also included are other inorganic acids such as boric acid, carbonic acid and hydrofluoric acid. Nitric acid should be further separated from the inorganic acids within this classification because of its oxidizing potential.

2. Inorganic Oxidizers include the oxidizing agents listed on previous page, with the exception of some peroxides (e.g. benzoyl peroxide), which are classified as organic oxidizers.

3. Air / Water Sensitive refers to those chemicals that emit flammable, corrosive or toxic gases on contact with air or water, or that ignite spontaneously on contact with air. Included in this category are the alkali earths (Mg, Ca, Ba) and alkali metals (Na, K), hydrides, carbides and elemental phosphorus. Elemental phosphorus should be further separated from the alkali metals.

4. Inorganic Solids include all the remaining inorganic compounds that do not fall within the previous classifications, in both the solid and liquid state. This will include the inorganic reducing agents, and inorganic salts and bases. If space is available, solids should be further separated from liquids.

5. Organic Solids include all organic compounds, excluding organic acids, solvents and oxidizers.

6. Organic Oxidizers include organic peroxides such as acetone peroxide and benzoyl peroxide. Many peroxides, however, are unstable and can explode when shocked or heated or by spontaneous chemical reaction. It is recommended that these compounds be removed from the school environment.

7. Organic Solvents and Acids include all liquid alkanes, alkenes and aromatic hydrocarbons, and all liquid and solid organic acids.

8. Gas Cylinders include all pressurized gases stored in gas cylinders.

3.6 DISPOSAL METHODS:

Recommended methods for disposal are given only for chemicals that are biodegradable or present toxicity hazards to human health and the environment. These chemicals have been defined as those organic chemicals that are readily biodegradable and present low toxicity hazard, and those inorganic chemicals composed of both a low hazard anion and a low hazard cation, as defined in Prudent Practices for Disposal of Chemicals from Laboratories. In those instances, instructions have been provided to landfill the waste chemical if it has a low water solubility. If the chemical is water soluble to at least 3% and has a boiling point greater than 50° C, instructions have been provided to dispose of the chemical to the drain with one-to-one hundred dilution.

The quantity of chemicals disposed of in the drain should generally be limited to laboratory quantities not exceeding more than a few hundred grams or millilitres. The chemical should be disposed of with at least a one-hundred fold dilution at the sink to ensure that there is no disruption of the sewage treatment facility. Prior to disposal, local regulations should be checked for possible restrictions on disposal of certain elements. In all other cases, disposal of the chemicals should be arranged with a company licensed to handle hazardous waste.

Environmental Protection can be contacted for a listing of companies licensed to handle hazardous waste.

In Manitoba, contact:

Toxic Substances Officer
Environmental Protection
Conservation and Protection
5th Floor - 269 Main Street
Winnipeg, Manitoba R3C 1B2
(204) 983-4813
or (204) 983-7788

In Saskatchewan, contact:

Head, Inspections and Investigations
Environmental Protection
Conservation and Protection
Room 300, Park Plaza
2365 Albert Street
Regina, Saskatchewan S4P 4K1
(306) 780-6001

In Alberta, contact:

Head, Toxic Substances
Environmental Protection
Conservation and Protection
Twin Atria #2
4999 - 98th Avenue
Edmonton, Alberta T6B 2X3
(403) 468-8059

In the Northwest Territories, contact:

Hazardous Materials Specialist
Environmental Protection
Conservation and Protection
9th Floor, Bellanca Bldg.
Box 370, Yellowknife
Northwest Territories X1A 2N3
(403) 873-3456

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CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Acacia Gum	Nontoxic. Weak allergen.	Incompatible with strong oxidizing agents (e.g. permanganates).	Organic Solid	Landfill
Acetic Acid CH_3COOH	Corrosive. Strong irritant to skin & respiratory tract. Moderately toxic by ingestion.	Incompatible with carbonates, hydroxides, oxides & oxidizing agents.	Organic Acid	Special Disposal
Acetone C_3H_6O	Narcotic.	Flammable. Incompatible with oxidizing agents (e.g. permanganates, halogens).	Organic Solvent	Special Disposal
Acrylic Polymer Emulsion	No Data.	No data.	Organic Solvent	Water based emulsion - Landfill. Solvent based- Special Disp.
Agar	Nontoxic.	Incompatible with oxidizing agents (e.g. permanganates, perchlorates).	Organic Solid	Landfill
Albumin, Egg	Nontoxic.	Incompatible with oxidizing agents (e.g. permanganates, perchlorates).	Organic Solid	Landfill
Alcohol, Denatured See Ethanol				
Alum See Aluminum Potassium Sulfate				

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Ammonium Carbonate $(NH_4)_2CO_3$	Evolves irritant fumes when heated.	Incompatible with acids and metal salts.	Inorganic Solid	Landfill or dissolve and dispose to drain (1:100 dilution).
Ammonium Chloride NH_4Cl	Moderate toxicity.	Incompatible with alkalis and their carbonates, and lead and silver salts.	Inorganic Solid	Landfill or dissolve and dispose to drain.
Ammonium Dichromate $(NH_4)_2Cr_2O_7$	Carcinogenic. Irritant to eyes and respiratory tract.	Flammable solid. May react explosively with organic material.	Inorganic Oxidizer	Special Disposal
Ammonium Hydroxide NH_4OH	Liquid and vapor strongly irritating to eyes. High toxicity when ingested or inhaled.	Violently reactive with mineral acids. Potentially explosive with halogens, mercury and silver.	Inorganic Solid	Dispose to drain (1:100 dilution).
Ammonium Nitrate NH_4NO_3	Low toxicity. Aqueous solution acidic.	Explosive hazard. Strong oxidizing agent violently reactive with acids and reducing agents (e.g. metals, organic compounds, sulfur).	Inorganic Oxidizer	Special Disposal
Amyl Alcohol $C_5H_{12}O$	Moderate toxicity. Severe irritant to eyes and skin.	Incompatible with oxidizing agents and hydrogen trisulfide.	Organic Solvent	Special Disposal

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Aluminum Al	Low toxicity.	Fine powder flammable and explosive. Explosively reactive with strong oxidizers and halocarbons (e.g. chloroform or carbon tetrachloride).	Inorganic Solid	Landfill
Aluminum Chloride $AlCl_3$	Severe injury to eyes on contact. Irritant to nose, throat and skin.	Reacts violently with water. Old containers can explode on opening.	Air/Water Sensitive	Special Disposal
Aluminum Oxide Al_2O_3	Toxic by inhalation of dust.		Inorganic Solid	Special Disposal
Aluminum Paint	Moderate toxicity.		Organic Solvent	Special Disposal
Aluminum Potassium Sulfate $AlKS_2O_8$	Low toxicity. Aqueous solution acidic.		Inorganic Solid	Dissolve and dispose to drain (1:100 dilution).
Aluminum Sulfate $Al_2(SO_4)_3$	Moderate toxicity. Aqueous solution acidic. Irritant to tissue.		Inorganic Solid	Dissolve and dispose to drain (1:100 dilution).
Ammonia See Ammonium Hydroxide				
Ammonium Bicarbonate NH_4HCO_3	Nontoxic.		Inorganic Solid	Landfill or dissolve and dispose to drain.

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Antimony Sb	Moderate toxicity by ingestion, skin absorption or inhalation.	Incompatible with acids (e.g. HCl) and strong oxidizing agents (e.g. permanganates).	Inorganic Solid	Special Disposal
Antimony Trichloride $SbCl_3$	Extreme toxicity. Corrosive to skin.	Can react violently with Al, K and Na.	Inorganic Solid	Special Disposal
Anthracite See Carbon				
Ascorbic Acid $C_6H_8O_6$	Nontoxic.		Organic Acid	Landfill
Baking Powder See Sodium Carbonate				
Baking Soda See Sodium Bicarbonate				
Barium Chloride $BaCl_2$	Extreme toxicity.		Inorganic Solid	Special Disposal
Barium Hydroxide $Ba(OH)_2$	High to extreme toxicity. Alkaline. Irritant to eyes, nose and throat.	Reacts violently or explosively with chlorinated rubber.	Inorganic Solid	Special Disposal
Barium Nitrate $Ba(NO_3)_2$	High to extreme toxicity.	Strong oxidizing agent reactive with reducing agents (e.g. organic material, metals).	Inorganic Oxidizer	Special Disposal

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Antimony Sb	Moderate toxicity by ingestion, skin absorption or inhalation.	Incompatible with acids (e.g. HCl) and strong oxidizing agents (e.g. permanganates).	Inorganic Solid	Special Disposal
Antimony Trichloride $SbCl_3$	Extreme toxicity. Corrosive to skin.	Can react violently with Al, K and Na.	Inorganic Solid	Special Disposal
Anthracite See Carbon				
Ascorbic Acid $C_6H_8O_6$	Nontoxic.		Organic Acid	Landfill
Baking Powder See Sodium Carbonate				
Baking Soda See Sodium Bicarbonate				
Barium Chloride $BaCl_2$	Extreme toxicity.		Inorganic Solid	Special Disposal
Barium Hydroxide $Ba(OH)_2$	High to extreme toxicity. Alkaline. Irritant to eyes, nose and throat.	Reacts violently or explosively with chlorinated rubber.	Inorganic Solid	Special Disposal
Barium Nitrate $Ba(NO_3)_2$	High to extreme toxicity.	Strong oxidizing agent reactive with reducing agents (e.g. organic material, metals).	Inorganic Oxidizer	Special Disposal

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Barium Sulfate $BaSO_4$	Nontoxic.	Incompatible with Al and P.	Inorganic Solid	Special Disposal
Benedict Solution $CuSO_4$, Na_2CO_3 and $Na_3C_6H_5O_7$	Poison.		Inorganic Solid	Dispose to drain.
Bismuth Bi	Low toxicity.	Flammable in powder form.	Inorganic Solid	Landfill
Borax Carmine See Carminic Acid				
Boric Acid H_3BO_3	Low toxicity. Irritating to eyes & respiratory tract.	Incompatible with alkali, carbonates and hydroxides.	Inorganic Acid	Dissolve and dispose to drain.
Bromine Water Br_2	Severe eye and skin irritant. Severe burns and internal damage from ingestion.	Oxidizing agent. Violently reactive with reducing agents (e.g. metals, ammonia).	Inorganic Oxidizer	Special Disposal
Bromophenol Blue	Moderate toxicity.		Organic Solid	Special Disposal
Bromothymol Blue	No data.		Organic Solid	Special Disposal
Butanol, Butyl Alcohol $C_4H_{10}O$	Narcotic. Irritating to skin & mucous membranes.	Flammable. Incompatible with oxidizing agents (e.g. permanganates and perchlorates).	Organic Solvent	Dispose to drain (1:100 dilution).

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Cadmium Cd	Carcinogenic. High toxicity by ingestion or inhalation of dust or fumes.	Violently reactive with ammonium nitrate, selenium or tellurium. Flammable in powder form.	Inorganic Solid	Special Disposal
Cadmium Carbonate $CdCO_3$	High toxicity. Carcinogenic.		Inorganic Solid	Special Disposal
Calcium Ca	Nontoxic.	Explosive when heated or in contact with oxidizing agents (e.g. halogens, carbonates or alkali hydroxides). Flammable if powder. Reacts with water, alcohols and acids liberating hydrogen.	Air/Water Sensitive	Special Disposal
Calcium Acetate $C_4H_6O_4Ca$	Nontoxic.		Inorganic Solid	Landfill
Calcium Carbide CaC_2	Severe injury to eyes and skin on contact.	Contact with water liberates flammable and explosive gas (acetylene) and produces corrosive solid. Reacts violently with $AgNO_3$, S, Se.	Air/Water Sensitive	Special Disposal
Calcium Carbonate $CaCO_3$	Nontoxic.	Incompatible with acids, ammonium salts and fluorine.	Inorganic Solid	Landfill
Calcium Chloride $CaCl_2$	Irritating to skin and eyes.	Liberates much heat when dissolved in water.	Inorganic Solid	Special Disposal

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Calcium Hydroxide $Ca(OH)_2$	Eye, nose, throat and skin irritant.	Incompatible with acids and oxidizing agents (e.g. halogens, permanganates).	Inorganic Solid	Landfill
Calcium Hypochlorite $Ca(OCl)_2$	Toxic by ingestion, skin contact and inhalation. Corrosive.	Oxidizing agent reactive with reducing agents (e.g. organic materials) & acids.	Inorganic Oxidizer	Special Disposal
Calcium Nitrate $Ca(NO_3)_2$	Moderate toxicity. Irritating to skin and eyes.	Strong oxidizing agent explosively reactive with reducing agents (e.g. organic materials). May explode if shocked or heated.	Inorganic Oxidizer	Special Disposal
Calcium Oxide CaO	Causes severe irritation to skin, mucous membranes & eyes.	Explosively reactive when mixed with water. Strongly caustic.	Air/Water Sensitive	Special Disposal
Calcium Sulfate $CaSO_4$	Ingestion may result in obstruction.	Incompatible with Al, P and diazomethane.	Inorganic Solid	Landfill
Camphor $C_{10}H_{16}O$	High toxicity.	Evolves flammable & explosive vapors when heated. Not compatible with oxidizing agents.	Organic Solid	Landfill (sublimes)
Carbon C	Dust irritating to eyes.	Flammable. Explosively reactive with oxidizing agents (e.g. nitrates, chlorates).	Inorganic Solid	Landfill

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Carbon Tetrachloride CCl_4	High toxicity. Carcinogenic.	Violently or explosively reactive with oxidizing agents (e.g. halogens, H_2O_2).	Organic Solvent	Special Disposal
Carmine, Alum Lake See Carminic Acid				
Carminic Acid $C_{22}H_{20}O_{13}$	No data.	Combustible.	Organic Acid	Special Disposal
Cedar Wood Oil	Low irritant and allergen.		Organic Solvent	Landfill small quant.
Charcoal See Carbon				
Chlorine Water 0.3% Cl_2	Irritating to lungs.		Inorganic Oxidizer	Dispose to drain.
Chloroform $CHCl_3$	Carcinogenic. Narcotic. Irritant to eyes.	Explosive reaction with alkali metals & halogens.	Organic Solvent	Special Disposal
Chromic Sulfate $Cr_2(SO_4)_3$	Moderate toxicity. Corrosive to skin & mucous membranes.		Inorganic Solid	Special Disposal
Chromium Potassium Sulfate $CrK(SO_4)_2$	Toxic by ingestion. Carcinogenic.		Inorganic Solid	Special Disposal
Citric Acid $C_6H_8O_7$	Nontoxic.	Incompatible with oxidizing agents (e.g. permanganates, perchlorates).	Organic Acid	Landfill or dissolve & dispose to drain.

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Cobaltous Chloride $CoCl_2$	High toxicity. Causes blood damage.		Inorganic Solid	Special Disposal
Cobaltous Nitrate $Co(NO_3)_2$	High toxicity.	Oxidizing agent reactive with reducing agents (e.g. organic material) and P.	Inorganic Oxidizer	Special Disposal
Cobaltous Sulfate $CoSO_4$	High toxicity.		Inorganic Solid	Special Disposal
Collodion	Moderate toxicity.	Flammable, releases toxic fumes which may be explosive when burning.	Organic Solvent	Special Disposal
Congo Red $C_{32}H_{22}O_6N_6S_2Na_2$	Mutagenic. Highly toxic by IV.	Incompatible with oxidizing agents (e.g. peroxides).	Organic Solid	Special Disposal
Copper Dust, Granules Cu	Toxic in finely divided form.	Incompatible with oxidizing agents (e.g. halogens, peroxides).	Inorganic Solid	Landfill
Copper Oxide See Cupric Oxide				
Copper Sulfate See Cupric Sulfate				
Cream of Tartar See Potassium Bitartrate				
Cupric Bromide $CuBr_2$	Moderate to high toxicity.		Inorganic Solid	Dissolve & dispose to drain (1:100 dilution).

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Cupric Chloride $CuCl_2$	High toxicity. Irritating to skin and mucous membranes.		Inorganic Solid	Dissolve & dispose to drain (1:100 dilution).
Cupric Nitrate $Cu(NO_3)_2$	High toxicity. Irritating to skin & mucous membranes.	Oxidizing agent, violently reactive with reducing agents (e.g. organic cmpds., silicon, metals).	Inorganic Oxidizer	Special Disposal
Cupric Oxide CuO	High toxicity by ingestion.	Reacts violently with Al, B, $CsHC_2$, hydrazine, Mg, K, Na, Ti and Zr. Incompatible with H_2, H_2S and metals.	Inorganic Solid	Landfill
Cupric Sulfate $CuSO_4$	Strong irritant. High toxicity by ingestion.	Reacts violently with Mg and hydroxylamine.	Inorganic Solid	Dissolve & dispose to drain (1:100 dilution).
Cuprous Chloride CuCl or Cu_2Cl_2	High toxicity.	Reacts violently with K.	Inorganic Solid	Landfill
Cyclohexane C_6H_{12}	Narcotic. Moderate toxicity. Mildly irritating to skin.	Flammable. Incompatible with oxidizing agents (e.g. permanganates).	Organic Solvent	Special Disposal
Dextrin	Low toxicity.	Incompatible with oxidizing agents (e.g. permanganates, perchlorates).	Organic Solid	Landfill
Dextrose See Glucose				

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Diastase of Malt	Nontoxic.	Incompatible with oxidizing agents (e.g. permanganates, perchlorates).	Organic Solid	Landfill
Dichlorobenzene, Para $C_6H_4Cl_2$	Moderate toxicity. Vapor may irritate skin, throat & eyes.		Organic Solid	Landfill - (sublimes at room temp.).
Epsom Salts See Magnesium Sulfate				
Ethanol CH_3CH_2OH	Low toxicity. Toxic when denatured. Irritant.	Flammable. Incompatible with oxidizing agents (e.g. HNO_3, peroxides).	Organic Solvent	Dispose to drain (1:100 dilution). If denatured, check local regulations.
Ethyl Alcohol See Ethanol				
Ethyl Acetate $CH_3COOC_2H_5$	Moderate toxicity by inhalation & skin absorption. Eye irritant.	Flammable. Incompatible with strong alkalis and acids, strong oxidizing agents and nitrates.	Organic Solvent	Dispose to drain (1:100 dilution).
Ethyl Ether $(C_2H_5)_2O$	Narcotic. Irritating to skin and mucous membranes.	Highly flammable. Forms explosive peroxides on storage.	Organic Solvent	Special Disposal
Fehling Solution A (Copper Sulfate)	Toxic by ingestion. Irritant.		Inorganic Solid	Dispose to drain (1:100 dilution).

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Fehling Solution B (Alkaline Tartrate)	No data.		Inorganic Solid	Dispose to drain (1:100 dilution).
Ferric Ammonium Sulfate $FeNH_4(SO_4)_2$	Moderate toxicity. Aqueous solution acidic.		Inorganic Solid	Landfill or dissolve & dispose to drain (1:100 dilution).
Ferric Chloride $FeCl_3$	Irritating to eyes & skin. Aqueous solution acidic. High to moderate toxicity.	Violent reaction with allyl chloride, Na, K. Reacts with water to form toxic & corrosive fumes.	Inorganic Solid	Special Disposal
Ferric Chloride, Hexahydrate $FeCl_3 \cdot 6H_2O$	Moderate toxicity. Aqueous solution acidic. Irritating to eyes and skin.		Inorganic Solid	Landfill or dissolve & dispose to drain (1:100 dilution).
Ferric Nitrate $Fe(NO_3)_3$	Moderate toxicity. Strong irritant.	Oxidizing agent reactive with reducing agents (e.g. organic materials) and sulfuric acid.	Inorganic Oxidizer	Special Disposal
Ferrous Ammonium Sulfate $Fe(SO_4) \cdot (NH_4)_2SO_4$	Irritating to skin and eyes. Moderate toxicity.		Inorganic Solid	Landfill or dissolve & dispose to drain (1:100 dilution).

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Ferrous Chloride $FeCl_2$	Irritating to skin and eyes. Moderate toxicity.	Can react violently with ethylene oxide, Na and K.	Inorganic Solid	Landfill or dissolve & dispose to drain (1:100 dilution).
Ferrous Sulfate $FeSO_4$	Moderate toxicity. Irritant to eyes and skin.	Incompatible with lead acetate, alkalis, KI, soluble carbonates, K and Na tartrate, Na borate.	Inorganic Solid	Dissolve & dispose to drain (1:100 dilution).
Formaldehyde Sol'n 37% CH_2O 15% CH_3OH	Irritant to eyes, nose, throat and skin. Ingestion may cause death.	Flammable. Reducing agent incompatible with oxidizing agents (e.g. halogens) & alkalis.	Organic Solvent	Dispose to drain (1:100 dilution).
Formalin See Formaldehyde Sol'n				
Fructose See Glucose				
Gelatin	Nontoxic.	Incompatible with formaldehyde and oxidizing agents (e.g. permanganates).	Organic Solid	Landfill
Gibberellic Acid $C_{19}H_{22}O_6$	Nontoxic.	Incompatible with strong oxidizing agents (e.g. permanganates).	Organic Acid	Landfill

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Glucose $C_6H_{12}O_6$	Nontoxic.	Incompatible with oxidizing agents (e.g. perchlorates, permanganates).	Organic Solid	Landfill or dissolve & dispose to drain.
Glycerin, Glycerol $C_3H_8O_3$	Low toxicity. Mist irritating to lungs.	Explosively reactive with strong oxidizing agents (e.g. K chlorate, K dichromate, chromium trioxide, $KMnO_4$).	Organic Solvent	Landfill
Hydrochloric Acid HCl	Liquid burns eyes and skin; vapors irritating to respiratory tract, eyes and skin.	High heat generation when added to water; can react explosively with reducing agents (e.g. ammonia, organic cmpds., metals & $KMnO_4$).	Inorganic Acid	Special Disposal
Hydrogen Peroxide H_2O_2 (3% to 90%)	Severe damage to mucous membranes, eyes & skin on contact.	Strong oxidizing agent explosively reactive with reducing agents (e.g. metals, ammonia & organic cmpds.)	Inorganic Oxidizer	Dilute sol'n less than 30% H_2O_2 can be disposed to drain if diluted to less than 3%. Special disp. for other solutions.
3-Indoleacetic Acid $C_{10}H_9NO_2$	Low toxicity.		Organic Acid	Landfill
Ink, red & black	Low to moderate toxicity by ingestion.		Organic Solvent	Dispose to drain.

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Iodine I_2	Solid burns skin and irritates eyes. Vapor irritating to respiratory tract and eyes.	Reacts explosively with bases and reducing agents (e.g. NH_3, organic cmpds. & metals).	Inorganic Oxidizer	Special Disposal
Iron Fe	Moderate toxicity. Iron compounds suspected carcinogens.	Strong reducing agent reacts violently with oxidizing agents (e.g. halogens).	Inorganic Solid	Landfill
Isopropanol, Isopropyl Alcohol $(CH_3)_2CHOH$	Narcotic. Moderate toxicity by inhalation and ingestion.	Flammable. Incompatible with strong oxidizing agents (e.g. perchlorates, permanganates).	Organic Solvent	Dispose to drain.
Janus Green B $C_{30}H_{31}ClN_6$	No data.		Organic Solid	Small quantities can be landfilled.
Kaolin	Nontoxic.		Inorganic Solid	Landfill
Lactose $C_{12}H_{22}O_{11}$	Nontoxic.	Incompatible with oxidizing agents (e.g. permanganates, chlorates).	Organic Solid	Landfill or dissolve & dispose to drain.
Lamp Black see Carbon				
Lanolin	Nontoxic.		Organic Solid	Landfill

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Lead Pb	High toxicity by ingestion and inhalation. Cumulative poison. May cause permanent brain damage.	Incompatible with oxidizing agents (e.g. peroxides), Na & K.	Inorganic Solid	Special Disposal
Lead Acetate $Pb(CH_3COO)_2$	High toxicity by ingestion, inhalation or skin absorption. Cumulative poison.	Incompatible with acids, chlorides, sulfates, alkalis, phosphates.	Organic Solid	Special Disposal
Lead Chloride $PbCl_2$	High toxicity by inhalation. Cumulative poison. May cause permanent brain damage.		Inorganic Solid	Special Disposal
Lead Monoxide PbO	High toxicity. Avoid breathing dust. Cumulative poison. May cause permanent brain damage.		Inorganic Solid	Special Disposal
Lead Nitrate $Pb(NO_3)_2$	High toxicity by ingestion or inhalation. Cumulative poison. May cause permanent brain damage.	Violently reactive with acids and reducing agents (e.g. sodium, potassium).	Inorganic Oxidizer	Special Disposal

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Lead Peroxide PbO_2	High toxicity by ingestion or inhalation. Cumulative poison.	Oxidizing agent. Violently reactive with reducing agents (e.g. organic compounds, metals).	Inorganic Oxidizer	Special Disposal
Lead Sulfide PbS	High toxicity by ingestion and inhalation. Cumulative poison. May cause permanent brain damage.	Incompatible with acids.	Inorganic Solid	Special Disposal
Lime, powdered see Calcium Oxide				
Lime Water Tablets see Calcium Hydroxide				
Linseed Oil	Toxic.	Violently reactive with zinc oxide.	Organic Solvent	Special Disposal
Lithium Chloride LiCl	Moderate toxicity.		Inorganic Solid	Dissolve & dilute to drain (1:100 dilution).
Litmus Paper	Nontoxic.		Inorganic Solid	Landfill
Lugol Iodine Solution see Iodine				
Lycopodium	No data.	Flammable.	Organic Solid	Landfill

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Lye see Potassium and Sodium Hydroxide				
Magnesia Tablets see Magnesium Oxide				
Magnesium Mg	High oral toxicity. Causes eye & skin irritation.	Reacts with moisture to form flammable gas. Reacts violently with oxidizing agents, metals, phosphates, air, sulfates, carbonates.	Air/Water Sensitive	Special Disposal
Magnesium Bromide $MgBr_2$	Moderate toxicity.		Inorganic Solid	Landfill
Magnesium Carbonate $MgCO_3$	Low toxicity.	Incompatible with formaldehyde.	Inorganic Solid	Landfill
Magnesium Chloride $MgCl_2$	Moderate toxicity. Harmful if inhaled, ingested or by skin absorption.	High heat generation when dissolved in water. Incompatible with strong oxidizing agents.	Inorganic Solid	Special Disposal
Magnesium Dioxide see Magnesium Peroxide				
Magnesium Hydroxide $Mg(OH)_2$	May be harmful by inhalation, skin absorption or ingestion.	Incompatible with P and maleic anhydride.	Inorganic Solid	Landfill
Magnesium Nitrate $Mg(NO_3)_2$	Moderate toxicity. Causes skin & eye irritation.	Strong oxidizing agent. Incompatible with strong reducing agents & strong acids.	Inorganic Oxidizer	Special Disposal

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Magnesium Oxide MgO	Toxic by inhalation of fumes during burning.	Incompatible with PCl_5 & interhalogens (e.g. ClF_3).	Inorganic Solid	Landfill
Magnesium Peroxide MgO_2	Moderate toxicity.	Incompatible with reducing agents. Very reactive with acidic materials & moisture.	Inorganic Oxidizer	Special Disposal
Magnesium Sulfate $MgSO_4$	Low oral toxicity. May cause eye irritation.		Inorganic Solid	Landfill
Maltose $C_{12}H_{22}O_{11}$	Nontoxic.	Incompatible with oxidizing agents (e.g. permanganates).	Organic Solid	Landfill or dissolve & dispose to drain.
Manganese Chloride $MnCl_2$	Moderate to high toxicity. Mutagenicity data.	Reacts violently with Na, K and zinc.	Inorganic Solid	Special Disposal
Manganese Dioxide MnO_2	High toxicity.	Strong oxidizing agent. Violently reactive with reducing agents (e.g. organic compounds, metals, sulfur).	Inorganic Oxidizer	Special Disposal
Manganese Sulfate $MnSO_4$	High toxicity. Strong irritant to respiratory tract. Irritating to skin and eyes.	Incompatible with strong acids.	Inorganic Solid	Special Disposal
Marble Chips	Nontoxic.		Inorganic Solid	Landfill

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Marine Salt Mixture see Sodium Chloride				
Mercuric Nitrate $Hg(NO_3)_2$	High to extreme toxicity by inhalation, skin contact or ingestion. Irritating to skin and eyes.	Oxidizing agent explosively reactive with reducing agents (e.g. organic compounds, especially petroleum hydrocarbons, ethanol & acetylene).	Inorganic Oxidizer	Special Disposal
Mercuric Oxide HgO	Extreme toxicity by inhalation of dust, ingestion or skin contact. Irritating to skin and eyes.	Reacts explosively with hydrazine. Incompatible with reducing agents, especially S, P & hydrocarbons, Cl_2, H_2O_2, Mg.	Inorganic Oxidizer	Special Disposal
Mercurous Chloride Hg_2Cl_2	Extreme toxicity. Mutagenicity data.	Mixture with K can explode on impact.	Inorganic Solid	Special Disposal
Mercurous Nitrate $HgNO_3$	Extreme toxicity. Irritant to eyes, skin, respiratory tract and mucous membranes.	Mixtures with P, tin (II) chloride & other reducing agents may react explosively.	Inorganic Oxidizer	Special Disposal
Mercury Hg	Vapor is extremely toxic. Spilled Hg is particularly hazardous.	Incompatible with metals, acetylene, ammonia, nitric acid and sodium azide.	Inorganic Solid	Special Disposal

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Methanol, Methyl Alcohol CH_3OH	Moderate toxicity by ingestion, inhalation or skin absorption. Chronic ingestion can cause blindness.	Flammable. Violently reactive with oxidizing agents (e.g. permanganates) and metals (Mg, Al or K).	Organic Solvent	Dispose to drain (1:100 dilution).
Methyl Blue $C_{37}H_{27}N_3Na_2O_9S_3$	No data.		Organic Solid	Small quantities can be landfilled.
Methylcellulose	Nontoxic.		Organic Solid	Landfill
Methylene Blue $C_{16}H_{18}ClN_3S$	High toxicity. Causes severe eye irritation.	Incompatible with reducing agents, caustic alkali and dichromates.	Organic Solid	Special Disposal
Methyl Green $C_{27}H_{35}BrClN_3$	Irritating to mucous membranes, eyes, skin & respiratory tract.		Organic Solid	Special Disposal
Methyl Hydrate see Methanol				
Methyl Orange $C_{14}H_{14}N_3NaO_3S$	Carcinogenic. May cause eye & skin irritation.		Organic Solid	Special Disposal
Methyl Red $C_{15}H_{15}N_3O_2$	No data.		Organic Solid	Special Disposal

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Methyl Salicylate $C_8H_8O_3$	High toxicity. Strongly irritating to skin and mucous membranes.	Incompatible with strong oxidizing agents & strong bases.	Organic Solid	Special Disposal
Modified Bristol's Solution	No data.			Small quant. can be diluted to drain.
Moth Ball Flakes see Dichlorobenzene, para				
Naphtha see Petroleum Benzin				
Naphthalene $C_{10}H_8$	Moderate toxicity by inhalation and ingestion.	Can react violently with oxidizing agents (e.g. nitric acid, halogens, permanganates).	Organic Solid	Landfill (sublimes)
Nickel Ni	High toxicity. Carcinogenic. May cause dermatitis.	Incompatible with Al, CH_3OH, S, acids & oxidizing agents.	Inorganic Solid	Special Disposal
Nickel Sulfate $NiSO_4$	Carcinogen. Highly toxic. Irritating to skin and eyes.	Incompatible with strong oxidizing agents.	Inorganic Solid	Special Disposal
Nicotinic Acid C_5H_4NCOOH	Moderate toxicity. Carcinogenic.	Incompatible with strong oxidizing agents and strong acids.	Organic Acid	Dissolve in boiling water & dispose to drain (1:100 dilution).

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Nitric Acid HNO_3	High toxicity by inhalation. Corrosive to skin & mucous membranes.	Strong oxidizing agent explosively reactive with reducing agents (e.g. organic cmpds., metals), strong bases.	Inorganic Acid NOTE: Store separate from other acids.	Special Disposal
Nitrogen N_2	Nontoxic, asphyxiant.	Can explode during use. Incompatible with O_3 & Li.	Gas Cylinder	Vent cylinder outdoors.
Oil (clove, corn, cottonseed, olive)	Nontoxic.	Incompatible with strong oxidizing agents (e.g. permanganates, peroxides)	Organic Solvent	Landfill
Oleic Acid $C_{18}H_{34}O_2$	Nontoxic. Mildly irritating to skin and mucous membranes.	Incompatible with strong oxidizing agents (e.g. peroxides).	Organic Acid	Landfill
Orcinol $C_7H_8O_2$	High toxicity. Can destroy tissue or damage eyes.	Incompatible with strong oxidizing agents, acid chlorides & anhydrides.	Organic Solid	Special Disposal
Oxalic Acid $(COOH)_2$	High toxicity. Corrosive to skin and mucous membranes.	Reducing agent reactive with metals, bases, acid chlorides, silver & mercury.	Organic Acid	Dissolve & dispose to drain (1:100 dilution).
Penicillin	Low to moderate toxicity. Strong allergen.	Incompatible with strong oxidizing agents, acids & heavy metal salts.	Organic Solid	Contact local pharmaceutical association or special disposal.

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Pepsin	Occasional allergic reaction.	Incompatible with alcohol, alkalis, tannins & salts of heavy metals.	Organic Solid	Landfill or dissolve & dispose to drain.
Petroleum Benzin	Moderate toxicity by ingestion, inhalation and skin absorption. Narcotic.	Flammable. Explosive when vapors mix with air and are ignited. Violently reactive with oxidizing agents (e.g. permanganates, halogens).	Organic Solvent	Special Disposal
Petroleum Ether see Petroleum Benzin				
Phenolphthalein $C_{20}H_{14}O_4$	Moderate toxicity.		Organic Solid	Special Disposal
Phenyl Salicylate $HOC_6H_4COOC_6H_5$	Moderate oral toxicity.		Organic Acid	Special Disposal
Phosphoric Acid H_3PO_4	Corrosive - irritating to eyes and skin. Toxic by ingestion and inhalation.	Incompatible with bases and reducing agents (e.g. metals, nitrites).	Inorganic Acid	Special Disposal
Phosphorus, red P	May be fatal if inhaled, ingested or absorbed through skin.	Heat sensitive. Incompatible with oxidizing agents, halogens, halides, S, Cu. Forms explosive mixtures with reducing agents.	Air/Water Sensitive NOTE: Store separate from Na & K.	Special Disposal

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Phosphorus, white or yellow P	Extreme toxicity by ingestion & inhalation. Strongly irritating to eyes, respiratory tract and skin.	Ignites spontaneously in air. Store under water. Explosively reactive with oxidizing agents (e.g. perchlorates, sulfur), strong caustics.	Air/Water Sensitive NOTE: Store separate from Na & K.	Special Disposal
Phthalic Anhydride $C_6H_4(CO)_2O$	Toxic. Strongly irritating to eyes, skin and respiratory tract.	Incompatible with strong oxidizing agents, strong acids and bases, and strong reducing agents.	Organic Acid	Special Disposal
Plaster of Paris see Calcium Sulfate				
Potash see Potassium Carbonate				
Potassium Alum see Aluminum Potassium Sulfate				
Potassium Bichromate see Potassium Dichromate				
Potassium Bitartrate $C_4H_5KO_6$	Moderate toxicity.		Organic Solid	Landfill
Potassium Bromide KBr	Moderate toxicity. Irritating to eyes, skin, respiratory tract & mucous membranes.	Incompatible with strong oxidizing agents, strong acids and heavy metal salts.	Inorganic Solid	Landfill or dissolve & dispose to drain (1:100 dilution).

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Potassium Carbonate K_2CO_3	Irritating to skin and eyes. Aqueous solution strongly alkaline.	Incompatible with strong oxidizing agents and acids.	Inorganic Solid	Landfill or dissolve & dispose to drain (1:100 dilution).
Potassium Chlorate $KClO_3$	High toxicity. Irritating to skin and eyes.	Strong oxidizing agent explosive when mixed with combustible material; explosively reactive with acids, bases and reducing agents.	Inorganic Oxidizer	Special Disposal
Potassium Chloride KCl	Moderate toxicity.	Incompatible with strong oxidizing agents and strong acids.	Inorganic Solid	Landfill or dissolve & dispose to drain.
Potassium Chromate K_2CrO_4	Carcinogenic. High toxicity. Corrosive. Aqueous solution alkaline.	Oxidizing agent incompatible with reducing agents (e.g. organic compounds).	Inorganic Oxidizer	Special Disposal
Potassium Cyanide KCN	Extreme toxicity. Absorbed by skin. Aqueous solution alkaline.	Liberates toxic fumes on contact with acids. Incompatible with oxidizing agents (e.g. chlorates, permanganates) and bases.	Inorganic Solid	Special Disposal

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Potassium Dichromate $K_2Cr_2O_7$	Carcinogenic. High toxicity. Highly corrosive to skin, eyes and mucous membranes.	Strong oxidizing agent incompatible with reducing agents (e.g. organic compounds, metals).	Inorganic Oxidizer	Special Disposal
Potassium Ferricyanide $K_3Fe(CN)_6$	Moderate toxicity.	Decomposes on heating to highly toxic fumes. Incompatible with acids & NH_3.	Inorganic Solid	Special Disposal
Potassium Ferrocyanide $K_4Fe(CN)_6 \cdot 3H_2O$	Moderate toxicity.	Decomposes on heating to highly toxic fumes. Incompatible with strong acids & strong oxidizing agents.	Inorganic Solid	Special Disposal
Potassium Hydroxide KOH	High toxicity by ingestion or inhalation. Corrosive - causes severe burns. Aqueous solution alkaline.	High heat generation when mixed with water. Violently reactive with acids and oxidizing agents (e.g. nitro cmpds., ammonia).	Inorganic Solid	Special Disposal
Potassium Iodate KIO_3	High toxicity. Irritating to eyes, skin, respiratory tract & mucous membranes.	Violent reaction with Al, As, Cu, P, S, metal sulfides, C, organic matter & strong reducing agents.	Inorganic Oxidizer	Special Disposal
Potassium Iodide KI	Moderate toxicity. Irritating to eyes, skin, resp. tract & mucous membranes.	Incompatible with potassium chlorate, metallic salts, tartaric and other acids.	Inorganic Solid	Dissolve & dispose to drain (1:100 dilution).

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Potassium Nitrate KNO_3	Moderate toxicity. Irritating to eyes, skin, respiratory tract & mucous membranes.	Easily ignited or explosive when mixed with reducing agents (e.g. organic compounds, metals). Incompatible with acids.	Inorganic Oxidizer	Special Disposal
Potassium Oxalate $K_2C_2O_4$	Toxic by inhalation and ingestion.	Incompatible with strong oxidizing agents.	Organic Solid	Special Disposal
Potassium Permanganate $KMnO_4$	Severe injury to eyes and skin on contact; strong solutions caustic. Mutagenic.	Powerful oxidizing agent explosively reactive with acids, bases and reducing agents (e.g. ammonia, metals, hydrocarbons). Spontaneously flammable on contact with P, organic matter, As, wood, etc.	Inorganic Oxidizer	Special Disposal
Potassium Phosphate, Monobasic KH_2PO_4	Moderate toxicity.		Inorganic Solid	Dissolve & dispose to drain.
Potassium Sulfate K_2SO_4	Moderate toxicity.		Inorganic Solid	Dissolve & dispose to drain (1:100 dilution).
Potassium Thiocyanate KSCN	High toxicity. Causes eye & skin irritation.	Incompatible with strong acids.	Inorganic Solid	Dissolve & dispose to drain.
Propanol, n-Propyl Alcohol C_3H_8O	Moderate toxicity. Mildly irritating to eyes and mucous membranes.	Incompatible with oxidizing agents, acid chlorides & acid anhydrides.	Organic Solvent	Dispose to drain.

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Pyrogallol $C_6H_3(OH)_3$	Extreme toxicity by skin absorption or ingestion. Mutagenic.	Reducing agent incompatible with oxidizing agents (e.g. permanganates), alkalis, NH_3, Fe and Pb salts.	Organic Solid	Special Disposal
Quinine Sulfate $C_{40}H_{50}N_4O_8S$	High toxicity. Irritating to eyes & skin. Teratogenic.	Incompatible with alkalis, iodine, $Ca(OH)_2$.	Organic Solid	Special Disposal
Salicylic Acid HOC_6H_4COOH	High toxicity. May cause skin rashes.	Incompatible with oxidizing agents and strong bases, iron salts, I_2 & lead acetate.	Organic Acid	Special Disposal
Saline Solution see Sodium Chloride				
Salol see Phenyl Salicylate				
Salt see Sodium Chloride				
Shellac, white	No data.		Organic Solvent	Special Disposal
Silica Gel see Silicic Acid				
Silicic Acid H_2SiO_3	Irritating to eyes, skin, respiratory tract & mucous membranes.	Incompatible with strong oxidizing agents & HF.	Inorganic Solid	Landfill

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Silicon Si	May be harmful by ingestion, skin absorption or inhalation.	Incompatible with strong oxidizing agents, HF, powdered metals.	Inorganic Solid	Landfill
Silver Ag	Avoid inhaling dust. Irritating to skin & mucous membranes.	Incompatible with acids, acetylene, oxalic and tartaric acid, bases and ammonium compounds.	Inorganic Solid	Special Disposal
Silver Chloride AgCl	Avoid inhaling dust. Irritating to skin & mucous membranes.		Inorganic Solid	Special Disposal
Silver Nitrate $AgNO_3$	High toxicity by ingestion, skin absorption or inhalation. Corrosive to skin & eyes on contact.	Oxidizing agent reactive with bases, metals and reducing agents (metal hydrides, organic compounds, phosphates).	Inorganic Oxidizer	Special Disposal
Sodium Na	Caustic to all tissue. Toxic fumes from fire.	Violently decomposes water, liberating hydrogen which can ignite spontaneously. Reacts violently with oxygen, CO_2, CCl_4, CS_2, and acids.	Air/Water Sensitive	Special Disposal
Sodium Acetate $NaC_2H_3O_2$	Low toxicity. Skin and eye irritant.	Combustible. Violently reactive with F_2, KNO_3 and diketene.	Organic Solid	Dissolve & dispose to drain.

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Sodium Bicarbonate $NaHCO_3$	Low toxicity. Skin irritant.	Incompatible with strong acids, NaK & NH_4H_2.	Inorganic Solid	Landfill
Sodium Bisulfate $NaHSO_4$	Strong irritant to eyes and skin. Aqueous solution acidic. Corrosive.	Incompatible with Al, bases, alcohols, moisture and calcium hypochlorite.	Inorganic Solid	Dissolve & dispose to drain (1:100 dilution).
Sodium Borate $Na_2B_4O_7$	Low toxicity. Aqueous solution alkaline.	Incompatible with acids, alkaloidal and metallic salts.	Inorganic Solid	Dissolve in warm water & dispose to drain (1:100 dilution).
Sodium Bromide NaBr	Moderate toxicity by ingestion and inhalation.	Incompatible with acids and heavy metal salts.	Inorganic Solid	Dissolve & dispose to drain.
Sodium Carbonate Na_2CO_3	Irritant to skin and eyes. Solutions strongly alkaline.	Incompatible with strong acids, Al and fluorine.	Inorganic Solid	Dissolve in water and dispose to drain (1:100 dilution).
Sodium Chlorate $NaClO_3$	High toxicity. Strong irritant to eyes and skin.	Strong oxidizing agent explosively reactive with combustible material, acids and reducing agents (e.g. organic cmpds., NH_3).	Inorganic Oxidizer	Special Disposal
Sodium Chloride NaCl	Moderate toxicity. Irritating to eyes.	Incompatible with strong oxidizing agents, acids BrF_3 and Li.	Inorganic Solid	Landfill or dissolve & dispose to drain.

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Sodium Citrate $C_6H_5Na_3O_7$	Low toxicity.		Organic Solid	Dissolve & dispose to drain.
Sodium Hydroxide NaOH	Corrosive - causes severe burns. Weak solutions (2.5M) can cause severe eye damage.	High heat generation when mixed with water; violently reactive with acids, metals (aluminum, zinc & tin) and oxidizing agents (e.g. halogens, nitro compounds).	Inorganic Solid	Special Disposal
Sodium Iodide NaI	Moderate toxicity. Causes eye & skin irritation.	Incompatible with potassium chlorate, metallic salts, tartaric and other acids.	Inorganic Solid	Dissolve & dispose to drain.
Sodium Metabisulfite $Na_2S_2O_5$	Moderate toxicity. Aqueous solutions acidic.	Incompatible with strong acids and oxidizing agents.	Inorganic Solid	Dissolve & dispose to drain (1:100 dilution).
Sodium Nitrate $NaNO_3$	High toxicity. Mutagenicity data.	Reacts violently or explosively with Al, Na and combustible material.	Inorganic Oxidizer	Special Disposal
Sodium Nitrite $NaNO_2$	Extreme toxicity. Eye irritant. Mutagenicity data.	Strong oxidizing agent violently explosive with reducing agents (e.g. ammonium salts, metals, organic compounds). Releases poisonous fumes when mixed with acids.	Inorganic Oxidizer	Special Disposal

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Sodium Peroxide Na_2O_2	Strong irritant to lungs, eyes & skin. Corrosive. Poisonous if ingested.	Explosively reactive with reducing agents (e.g. organic material, metals), water, hydroxy compounds, acids.	Inorganic Oxidizer	Special Disposal
Sodium Phosphate, Monobasic NaH_2PO_4	Low toxicity. Irritating to skin, eyes and lungs.	Incompatible with strong acids.	Inorganic Solid	Landfill
Sodium Salicylate HOC_6H_4COONa	High toxicity. Mutagenicity data.	Incompatible with mineral acids, ferric salts, I_2, $AgNO_3$, lead acetate.	Organic Solid	Special Disposal
Sodium Silicate $Na_2O.SiO_2$	High oral toxicity. Caustic. Irritating to lungs, eyes & skin.	Violent reaction with fluorine.	Inorganic Solid	Special Disposal
Sodium Sulfate Na_2SO_4	Low oral toxicity.	Violent reaction with Al, Mg & strong acids.	Inorganic Solid	Landfill or dissolve & dispose to drain.
Sodium Sulfide Na_2S	Extreme toxicity. Strongly irritating to skin and tissue. Aqueous solutions alkaline.	Reacts violently with water, C, diazonium salts & acids. Unstable & can explode on percussion or heating.	Air/Water Sensitive	Special Disposal
Sodium Sulfite Na_2SO_3	Moderate toxicity. Strong irritant to eyes and skin.	Incompatible with strong acids.	Inorganic Solid	Dissolve & dispose to drain (1:100 dilution).

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Sodium Thiosulfate $Na_2S_2O_3$	Moderate toxicity. Irritating to skin and eyes.	Incompatible with iodine, acids and lead, mercury and silver salts, and oxidizing agents.	Inorganic Solid	Landfill
Starch $(C_6H_{10}O_5)_n$	Nontoxic.	Incompatible with oxidizing agents.	Organic Solid	Landfill
Stearic Acid $C_{18}H_{36}O_2$	Irritating to eyes, skin & lungs.		Organic Acid	Landfill
Strontium Chloride $SrCl_2$	Low to moderate toxicity.		Inorganic Solid	Landfill or dissolve & dispose to drain.
Strontium Nitrate $Sr(NO_3)_2$	Moderate toxicity. Irritating to eyes, skin & lungs.	Strong oxidizing agent. Violently reactive with reducing agents. May explode when shocked or heated.	Inorganic Oxidizer	Special Disposal
Sucrose $C_{12}H_{22}O_{11}$	Nontoxic.	Incompatible with oxidizing agents (e.g. permanganates).	Organic Solid	Landfill or dissolve & dispose to drain.
Sudan III $C_{22}H_{16}N_4O$	No data.		Organic Solid	Small quantities (i.e. 10 g or less) can be landfilled.

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Sulfur (roll, flower, flakes) S	Low toxicity. Mildly irritating to skin and mucous membranes.	Reducing agent reactive with acids and oxidizing agents (e.g. permanganates, halogens, peroxides).	Inorganic Solid	Landfill
Sulfuric Acid H_2SO_4	Corrosive - causes severe burns. Inhaling of fumes can cause lung damage. Fumes irritating to eyes, nose & throat.	High heat generation when mixed with water. Violently reactive with metals, bases and reducing agents (e.g. organic compounds).	Inorganic Acid	Special Disposal
Tannic Acid $C_{76}H_{52}O_{46}$	Carcinogenic. Moderate toxicity.	Incompatible with heavy metal salts and oxidizing agents (e.g. permanganates, chlorates).	Organic Solid	Special Disposal
Tartaric Acid $C_4H_6O_6$	Moderate toxicity. Strong solutions mildly irritating.		Organic Acid	Dissolve & dispose to drain (1:100 dilution).
Tin Sn	Elemental tin not considered toxic.	Incompatible with sulfur, halogens, bases and strong oxidizing agents.	Inorganic Solid	Landfill
Toluene $C_6H_5CH_3$	Toxic by ingestion, inhalation & skin absorption. Narcotic. Skin & eye irritant. Mutagenic.	Incompatible with oxidizing agents.	Organic Solvent	Special Disposal

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Trypsin	Irritant to skin, mucous membranes & respiratory tract.		Organic Solid	Dissolve & dispose to drain.
Turpentine $C_{10}H_{16}$	Moderate toxicity. Irritating to skin & mucous membranes. Can cause serious irritation of kidneys.	Incompatible with strong oxidizing agents (e.g. peroxides).	Organic Solvent	Special Disposal
Uric Acid $C_5H_4N_4O_3$	Irritating to eyes, skin, lungs and mucous membranes.	Incompatible with acids, bases and oxidizing agents.	Organic Acid	Landfill
White Shellac see Shellac, white				
Xylene $C_6H_4(CH_3)_2$	Narcotic. High toxicity by ingestion, skin absorption or inhalation.	Flammable. Incompatible with oxidizing agents (e.g. permanganates).	Organic Solvent	Special Disposal
Yeast	No data.		Organic Solid	Landfill
Zinc Zn	Skin irritant. Pulmonary system effects.	Will ignite in presence of moisture. Incompatible with acids, chlorides, S and oxidizing agents (e.g. halogens, perchlorates).	Air/Water Sensitive	Special Disposal

CHEMICAL NAME FORMULA	HAZARD TO HEALTH	HAZARDOUS REACTIONS	STORAGE GROUP	DISPOSAL METHOD
Zinc Chloride $ZnCl_2$	High toxicity. Strongly irritating to eyes, skin and mucous membranes.	Incompatible with strong oxidizing agents.	Inorganic Solid	Dissolve & dispose to drain (1:100 dilution).
Zinc Nitrate $Zn(NO_3)_2$	Corrosive to skin, eyes and lungs.	Strong oxidizing agent, very reactive with acids & reducing agents (e.g. organic compounds, metals, S, P).	Inorganic Oxidizer	Special Disposal
Zinc Oxide ZnO	Irritating to skin & eyes. Harmful by inhalation.	Incompatible with strong oxidizing agents, Mg & chlorinated rubber.	Inorganic Solid	Special Disposal
Zinc Sulfate $ZnSO_4$	Moderate toxicity. Irritating to skin and mucous membranes. Mutagenic.	Incompatible with strong oxidizing agents.	Inorganic Solid	Special Disposal